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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,771	03/24/2004	**Gopal B. Avinash**	142427	2770

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EXAMINER	
VANCHY JR, MICHAEL J	
ART UNIT	**PAPER NUMBER**
2624	
MAIL DATE	**DELIVERY MODE**
07/24/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/708,771	AVINASH ET AL.	
	Examiner	Art Unit	
	MICHAEL VANCHY JR	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7-12* is/are allowed.

6)☐ Claim(s) *1-6, 13-27, 31-33* is/are rejected.

7)☒ Claim(s) *28 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 10-17, filed March 6, 2008, with respect to the rejection(s) of claim(s) 1-30 under 35 U.S.C 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Wang et al.

Allowable Subject Matter

1. Claims 7-12 allowed.

2. Claims 28 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 18-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claims 18-30 utilize to statutory means, an apparatus (a program storage medium) and a method. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-5, 17-22, and 30-33 rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al., 7,391,895 B2.

Regarding claim 1, Wang teaches a method for processing a digital image, the method comprising: estimating a foreground region relating to an imaged object; estimating a background region relating to other than the imaged object; and by using the image, the estimated foreground region and the estimated background region, calculating a transition region disposed between the foreground region and the background region; wherein the estimated foreground region, the estimated background region, and the calculated transition region, each comprise a separate set of pixels that may each be processed separately for suppressing pixel intensities in the estimated background region and improving image quality (Figs. 10(a-d) and col. 9, lines 12-32). The examiner takes into account that since each region (foreground, background, and transition) are separate it would be obvious that each set can then be processed separately to allow for pixel intensity suppression.

Regarding claim 2, Wang teaches a foreground region comprises defining an initial foreground region as that region containing those pixels of the image meeting a first criterion; and the estimating a background region comprises defining the background region as that region containing those pixels of the image meeting a second

criterion; and the transition region is calculated by a gradient constrained hysteresis threshold method (Figs. 4(a-c), col. 4, lines 22-52, and col. 6, lines 6-27). The examiner takes into account that even though a gradient constrained hysteresis isn't explicitly stated, looking at Figures 4b and 4c it is clear to one of ordinary skill in the art, that this specific threshold can easily be created based on the information gathered by the apparatus. Thus, even though a different threshold is utilized in Wang, the one stated by the applicant can easily be implemented.

Regarding claim 3, Wang teaches the first criterion comprises a pixel intensity greater than a first threshold (Figs. 4(a-c), 6(a-b), col. 4, lines 22-52, and col. 6, lines 6-27).

Regarding claim 4, Wang teaches the second criterion comprises a pixel intensity less than a second threshold (Figs. 4(a-c), 6(a-b), col. 4, lines 22-52, and col. 6, lines 6-27).

Regarding claim 5, Wang teaches the calculating a transition region comprises calculating the transition region as that region containing those pixels of the image meeting a third criterion (Figs. 4(a-c), 6(a-b), col. 4, lines 22-52, and col. 6, lines 6-27).

Regarding claim 17, Wang teaches wherein the digital image is a digital image of a biological object obtained using x-ray imaging (col. 1, lines 36-49).

Regarding claim 18, see rejection made to claim 1, as it addresses the rejection to the method of this computer program.

Regarding claim 19, see rejection made to claim 2, as it addresses the rejection to the method of this computer program.

Regarding claim 20, see rejection made to claim 3, as it addresses the rejection to the method of this computer program.

Regarding claim 21, see rejection made to claim 4, as it addresses the rejection to the method of this computer program.

Regarding claim 22, see rejection made to claim 5, as it addresses the rejection to the method of this computer program.

Regarding claim 30, see rejection made to claim 17, as it addresses the limitations of the rejection.

Regarding claim 31, see rejections made to claims 1-5, as they address the limitations made within claim 31.

Regarding claims 32 and 33, Wang teaches a threshold which can be implemented through a gradient constrained hysteresis threshold. Since the threshold can be determined/changed, a percentage of the mean intensity of the non-zero pixels can be used as the first threshold, even though Wang does not explicitly state using such a first threshold.

3. Claims 6, 13-16, 23-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al., 7,391,895 B2 and further in view of Hong et al., 2002/0037103.

Regarding claim 6, Wang teaches the third criterion comprises: a pixel having a pixel intensity greater than the second threshold, and a gradient magnitude that is within a gradient tolerance value of the gradient magnitude of the foreground pixel (6(a-b), and col. 6, lines 6-27). The examiner takes into account that Wang does not explicitly state using a gradient tolerance value but it is obvious that with the information determined by the apparatus that one is or can be easily implemented. Wang, however does not explicitly teach a morphological connection to a foreground pixel, which Hong does ([0020]). It would be clear to one of ordinary skill in the art at the time of the invention to modify Acker to include a morphological operation/connection so that image quality is improved.

Regarding claim 13, Wang teaches defining an object region as the union of the initial foreground region and the initial transition region (Figs. 10(c-d)), Hong teaches using a morphological operation ([0020]).

Regarding claim 14, Wang teaches defining a final foreground mask as the initial foreground region; defining a final transition mask as the difference between the object region and the final foreground region; and defining a final background mask as the remainder of the image ([0020] and [0086-0088]).

Regarding claim 15, Wang teaches suppressing pixel intensities in the background region by gradually reducing the intensity of background pixels to zero as a function of their distance from the object region ([0020]).

Regarding claim 16, Wang teaches the function comprises a linear ramp function, an exponential function, a Gaussian function, a Hanning function, a Hamming function, any function for reducing a value with respect to distance, or any combination of functions comprising at least one of the foregoing functions ([0020]).

Regarding claim 23, see rejection made to claim 6, as it addresses the rejection to the method of this computer program.

Regarding claim 24, see rejection made to claim 13, as it addresses the rejection to the method of this computer program.

Regarding claim 25, see rejection made to claim 14, as it addresses the rejection to the method of this computer program.

Regarding claim 26, see rejection made to claim 15, as it addresses the rejection to the method of this computer program.

Regarding claim 27, see rejection made to claim 16, as it addresses the rejection to the method of this computer program.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL VANCHY JR whose telephone number is (571)270-1193. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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